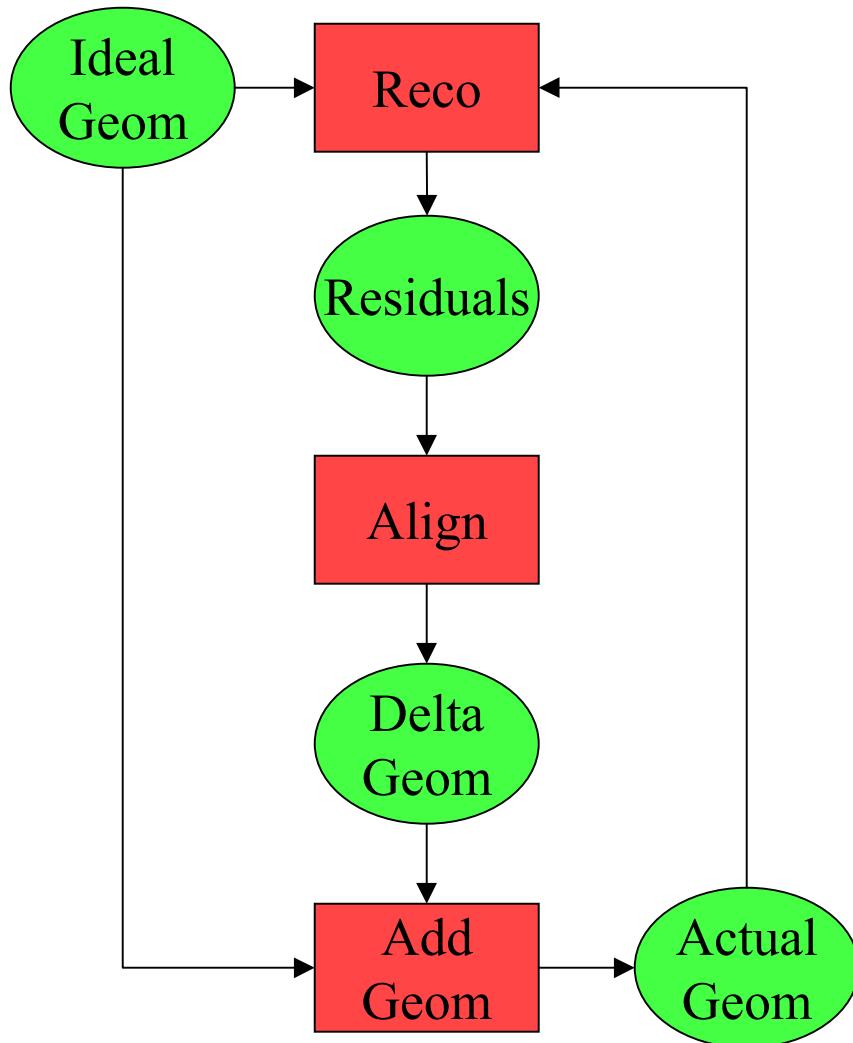


# Alignment Planning

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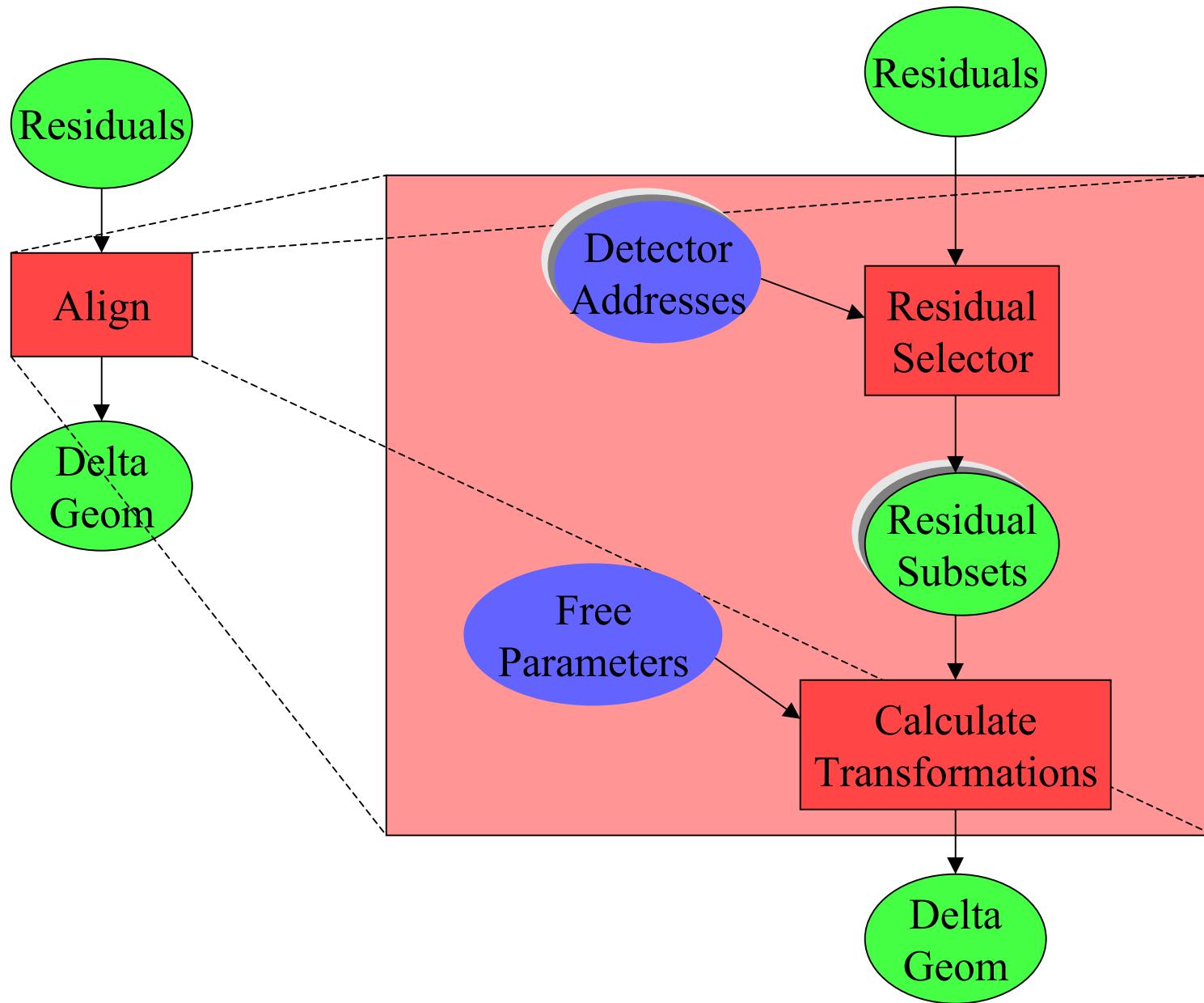
## Dhiman's proposal

Ideal and delta geometry tree structures should be the same. Then we can implement  $\text{actual\_wedge} = \text{ideal\_wedge} + \text{delta\_wedge}$

Delta geometry includes both displacement+rotation and deformation.

Need general addressing scheme to simulate misalignment using GeometryXForm and move.

First step: Implement delta geometry, write code to produce actual geometry.



# Alignment Addressing Scheme I: Full access to geometry

SiBaseGeometry	smt	1
SiCenter	ctr	1
SiCentral	c1, c2, ..., c8	1, 2, ..., 8
SiBarrel	b	1
SiLayer	ly1, ly2, ..., ly8	1, 2, ..., 8
SiLadder	ld1, ld2, ...	1, 2, ...
SiDisk	d1, ...	2, ...
(SiSubDisk)	sd1, sd2	1, 2
SiWedgeHolder	wh1, wh2, ...	1, 2, ...
SiWedge	w1	1
SiEnd	en1, en2	2, 3
SiDisk	d1, d2	1, 2
(SiSubDisk)	sd1, sd2	1, 2
SiWedgeHolder	wh1, wh2, ...	1, 2, ...
SiWedge	w1, w2	1, 2

Examples (ignoring subdisks):

Address = smt.ctr.c3.b.ly5.ld10 = 1.1.3.1.5.10

smt.ctr.c8.d3.wh12.w1 = 1.1.8.4.12.1

smt.en2.d2.wh19.w2 = 1.3.2.19.2

smt.en2.d2 = 1.3.2

## SCHEME 2.5 Corresponds to SmtAddress (Ela's Suggestion)

SiBaseGeometry	smt	1
DetTyp	ba	1
Barrel	b1, b2, ..., b6	1, 2, ..., 6
Layer	ly1, ly2, ..., ly8	1, 2, ..., 8
Ladder	ld1, ld2, ...	1, 2, ...
DetTyp	fd	2
Fdisk	f1, f2, ..., f12	1, 2, ..., 12
Wedge	w1, w2, ..., w12	1, 2, ..., 12
DetTyp	hd	3
Hdisk	h1, h2, h3, h4	1, 2, 3, 4
WedgeHolder	wh1, wh2, ..., wh24	1, 2, ..., 24
Wedge	w1, w2	1, 2

Examples:

Address = smt.ba.b2.ly5.ld10 = 1.1.2.5.11

smt.fd.f12.w12 = 1.2.12.12

smt.hd.h4.wh19.w2 = 1.3.4.19.2

smt.hd.h4 = 1.3.4

# SiGeometer

## Some of the Public Methods

const SiLadder\* get\_ladder(int ibarrel, int ilayer, int iladder)

Return a pointer to a constant ladder.

const SiWedge\* get\_wedge(int idisktype, int idisk, int iwedge)

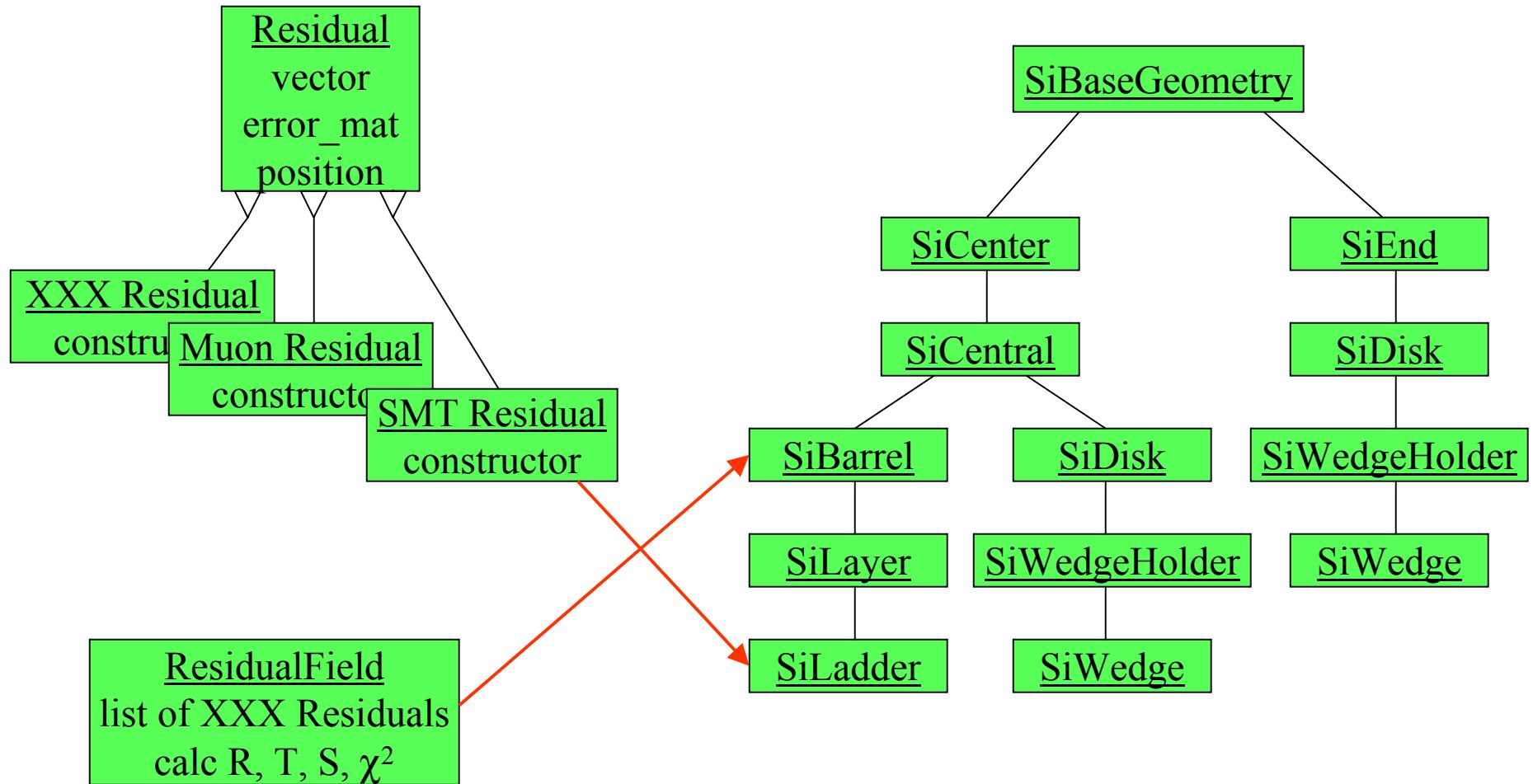
Return a pointer to a constant wedge.

const SiWedge\* get\_wedge(int idisktype, int idisk, int isubdisk, int iwedge)

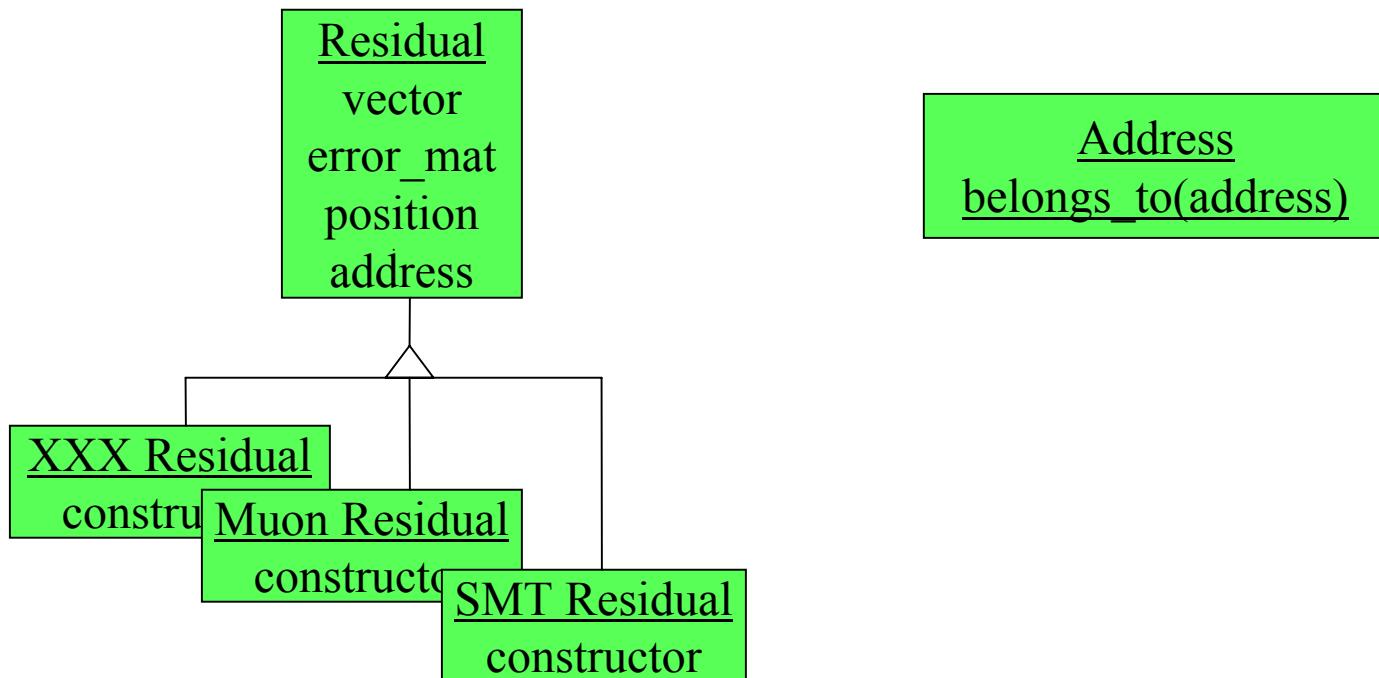
Return a pointer to a constant wedge.

# SiAlignmentGeometer

# SMT Class Structures for Alignment



## SMT Alignment Class Structures (Including DC, EB and JH comments)



Address  
belongs\_to(address)

ResidualField  
list of XXX Residuals  
constructor(address)  
calc R, T, S,  $\chi^2$